Comparison of VM Live Migration Process Impacts on QoS of Web Server Hosted in Cloud

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Abstract

Virtual Machine (VM) Live Migration improves system manageability through VMs rearrangement in their physical hosts. System managers can redistribute VMs to tackle different challenges as: VMs consolidation for energy consumption reduction, load balancing and software rejuvenation. VM live migration consists in successive transfers of memory pages from one host to another. Thus, system capacity planning may consider VM live migration overhead. This paper presents impacts of VM live migration operations on system performance of different RAM-sized VMs (512MB, 1GB and 2GB). These experiments aims to observe how RAM size changes can affect responsiveness and reliability of a Web Server hosted on a single VM. The experiment has external client which sends web requests in a constant rate through Autobench (httpperf) benchmark tool. This benchmark tool provides results of Web Server errors and response time during VM live migration process. Experiments results also consider network throughput during VM live migration. The results presents that network overhead due to VM live migration causes major system performance degradation in VMs with more amount of RAM. Therefore, this paper results may be useful for managers to consider VM live migration impacts
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in capacity planning.

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Index Terms
Keywords

VM Live Migration, Cloud Computing, Performance, Web Server